ITGS

Overall grade boundaries

Higher level

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 11	12 - 23	24 - 35	36 - 47	48 - 58	59 - 69	70 - 100

Standard level

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 10	11 - 22	23 - 34	35 - 45	46 - 56	57 - 68	69 - 100

General comments

The misuse and lack of use of appropriate IT terminology and terminology relating to social and ethical considerations was a serious concern on all of the internal and external assessment components. If students do not know the terminology that appears in the ITGS Guide and news articles and the terms used to describe the hands-on use of IT systems, they cannot write responses.

Although ITGS is in group 3, it does have some similarities to an experimental science in that there is an expectation that practical work, in addition to that required to develop the IT solution for the Project, should be carried out throughout the duration of the course.

Consequently, many of the examination questions are written with this in mind, so students who have taken part in lessons where they have used different software packages will probably have an advantage over those who have not had this experience. Please note this does not mean spending excessive amounts of time studying any particular application and ignoring issues that arise from the use of IT in contemporary society.

Furthermore, many problems that arise in the Project and externally assessed components can be traced back to this lack of familiarity with software and IT concepts from practical activities. Some common examples are outlined below.

- Using a small bitmap image from the Internet will probably not allow the image to be enlarged and used for the background of a poster. This can be tested by expanding a prototype image to the intended size before going any further.
- Images taken with a high resolution camera must be changed to an appropriate format, size and resolution and tested before proceeding thus allowing web pages to load the images rapidly.
- Students should learn to use an effective testing strategy to test results in a prototype spreadsheet such as comparing results from a formula with known results to ensure it works as expected. This can apply to functions, formulae or other software functionality.

- Creating a prototype relational database of at least three linked tables with queries and forms allows it to be interrogated it in a meaningful way prior to developing the final version.
- Creating and comparing documents in print and electronic versions.

Finally candidates must understand the difference between a spreadsheet and database. The two terms cannot be used interchangeably.

Students must have the opportunity to analyze scenarios and write responses for the assessment criteria in the Portfolio (replaced in May 2012 with the new Paper 2) and questions on examination papers. It is only through on-going use of the command terms, research, writing responses and receiving feedback that students will improve their knowledge of IT systems, use of ITGS terminology and organizational skills in their written responses. A wide range of appropriate resources are available on ITGSopedia.

Higher level internal assessment – Portfolio and extension

(In May 2012 this becomes SL/HL Paper 2)

Component grade boundaries

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 4	5 - 9	10 - 15	16 - 21	22 - 27	28 - 33	34 - 45

General comments

Since the new course is being introduced with first examinations in May 2012 this task has been modified to become the new Paper 2. The parts that have been carried over are Criteria A, B, C and D, and the comments below for this examination session include important advice for preparation for Paper 2.

Students will still need to complete similar tasks to those that they carried out in the development of their portfolio. These should continue to be based on issues in current news items. The articles selected by the teacher will most likely need to be modified to suit the criteria and the subject content more closely (TSM). A good method for choosing a news item is to select a topic or scenario from those studied and find a suitable news item about the issues involved; for example, employee monitoring, computer game addiction, etc. ITGSopedia is an excellent starting point for such information.

Over the course of the two years, the tasks need to cover the six main scenarios in Strand 2 of the new course; some articles will involve more than one scenario. In order to provide students with experience of a broad range of scenarios, all the criteria do not need to be completed for all of the news articles analyzed. At times it may be desirable to concentrate on only one or two criteria. However, students need to be given the opportunity to practise all the criteria A-D a significant number of times throughout the course. This could be done in class **or set** as an assignment. Students will need to be given practice responding to a Paper 2 article under test conditions. Unlike the Portfolio, which was researched over a period of weeks, the new Paper 2 will be a timed exam.

The best method of analysing a news item is using the ITGS Triangle. This will encourage the students to do the same in the Paper 2 examination and will reinforce the use of ITGS terminology and concepts. Also it is essential to teach the students the meaning of the sequence of command terms used in the Paper 2 criteria – description, explanation, analysis and evaluation. This applies especially to the command term progression in Criterion C where the description of the impacts, the analysis and the evaluation **should** be in separate paragraphs. It is strongly recommended that teachers use the booklet in the Specimen Papers to teach students to manage their time, organise their answer, and write responses of appropriate length.

The range and suitability of the work submitted

There were still a number of candidates who needed to consider whether the news item and the interviewees they had chosen lent themselves to good analysis and evaluation. There are also students who used news items that were focusing too much on the positive impacts of IT,

hypothetical applications in the future (especially about robots), general topics about policy involving the use of IT, and IT systems that were far too complex to be analysed in a portfolio report of 1000 words.

For the new course teachers need to avoid choosing these types of news items when practicing for the new Paper 2. The practice news items should have a clear focus on a medium to small IT system with an issue that has specific negative and positive impacts (not many) on an easily identifiable group of stakeholders. This type of news item should be able to be analysed within in the time limit for the exam, 75 minutes.

Candidate performance against each criterion

Criterion A – Presentation of the issue

Candidates often spend too much of this criterion describing or explaining the positive impacts, some facts from the news item or other research in the first part of criterion A, and only in the last paragraph outlined or identified the issue for the main stakeholders. Candidates often did not refer directly to the IT system involved or the major effects on the stakeholders in sufficient detail, and hence did not adequately explain the connection between the issue, the stakeholders and the IT system.

Criterion B – The IT background of the issue

Often B was very generic, focused on the input and the output only and did not use correct IT terminology. A general guide to the level of IT required is an explanation which contains material about IT beyond that expected from a reasonably well informed average person. This will often mean that teachers, as well as the students, will need to research the IT system. Too often the IT system was too large to be addressed properly. In these cases students often picked some aspects and generally described them.

A suggested method for practising Paper 2 Criterion B is to present the students with the input and output for the IT system and then to ask the students to investigate the often hidden processing, software, hardware and storage components. The students would then be asked to explain how the IT system contributed to the concern in Criterion A.

Criterion C – The impact of the issue

The main problem is that analysis and evaluation were very often not even attempted, and the criterion was often too short, sometimes one long paragraph! The voice of the candidate is needed for the higher marks. The candidate needs to demonstrate higher order thinking skills – to compare/examine the impacts and to then evaluate the overall impact. Many candidates clearly did not see this as the main purpose of the criterion.

When practising for Paper 2 the answer should be in three sections: sections. First the student should describe a number of positive and negative impacts about the scenario in detail; then critically analyse them with regard to the size, extent, etc. of the impact; and, finally, provide an overall conclusion evaluating the extent of the impact.

Criterion D – Solutions to problems arising from the issue

Some candidates were still including more than one solution, and often there was a lack of evaluation of the solution for the higher marks. This is one of the easiest criteria where full marks can be obtained, but candidates often let themselves down with only a general description of the solution.

When practicing for Paper 2 the single solution should address the one major problem identified in Criterion C, but may also address some minor problems. The answer should be

divided into a number of sections as indicated in the assessment criteria: the solution described in detail, how the solution solves the problem, strengths and weaknesses, and future concerns/developments identified if possible.

The comments above that relate to criteria A – D must be considered when developing the response for the new Paper 2.

Criterion E – Selection and use of sources

Generally the research skills had improved but the use of a standard bibliographic and citation system, such as the MLA method, definitely needed improving. Often the exact date of publication (not just the year) and the publishing organisation's full name was missing.

Criterion F – Expression of ideas relevant to the social issue

The candidates performed best in this criterion when the main issue in Criterion A was consistently followed through all criteria. But extensive use of examples was rare, often due to the lack of sources used and cited in Criterion C.

Extension

Criterion N

This was usually a criterion that was done well, and extensive analysis was not as rare as previously.

Criterion O

Too often candidates made general comparisons between the portfolio and the interview, and then focused on a discussion of the interview with little further reference to the portfolio. Specific quotes from both the portfolio and the interviews were not common. There were more attempts at providing and justifying a 'new idea' this year.

Criterion P

Very often candidates reverted to providing solutions rather than implications. The ability to write about broader implications is the highest thinking skill and the marks for this criterion were generally low.

Criterion Q

The two major problems were the lack of sufficient detail in the header to trace the interviewee, and the lack of imagination in the creation and use of questions. Too many questions were not focused on the main issue and follow up questions were rare.

Criterion R

Most candidates gained two marks for using the criteria headings and having a consistent focus on the issue under investigation.

Standard level internal assessment - Project

(In May 2012 this becomes SL/HL Project)

Component grade boundaries

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 4	5 - 8	9 - 12	13 - 17	18 - 21	22 - 26	27 - 35

General comments

The transition to the new assessment criteria is a natural progression from the current project criteria. All of the comments in this report will be focused on providing feedback from the November 2011 session with a view towards providing recommendations for the November 2012 session.

Candidate performance against each criterion

Criterion G - Identifying the problem within a social context

Some students provided evidence of interviewing their client to support criterion G. For May 2012, the interview questions need to be carefully formulated so that they support new Criterion A and new Criterion F. Time spent on writing, testing and revising the questions is time well spent. The client must be closely involved throughout all stages of the process (new criteria A-F).

Criterion H - Analysis and feasibility study

In spite of attempts to explain Criterion H, this criterion has not been addressed well. Most candidates have failed in properly justifying the chosen solution or explaining how the chosen solution would solve the problem raised in criterion G. The new criterion B will also require a justification for the proposed solution.

Criterion I - Planning the chosen IT solution

The design of the products was neither detailed nor described well (new Criterion D). The design of a product consists of the overall structure of the product (i.e. storyboard for videos and podcasts, sitemaps for websites), as well as the internal structure of the product, such as specific detail from scenes in a video (i.e. lighting, position of actors, sound) or website (i.e. design of the various pages on the website, design of logos and buttons, choice of fonts).

Students need to collect appropriate information for the content of their products as well as researching best practice for product design.

All screenshots must be legible, and reference must be made to them from the text. Necessary arrows and circles must be used to show the relevant area of the screenshots (new Criterion E).

Criterion J - Testing and evaluating the solution

Testing was generally well done. The testing process in the new criteria is simplified. However, students need to realize that the references to testing in the new criteria B, D and F are closely aligned (i.e. the same set of tests run through the documentation).

Criterion K - Assessing the social significance of the product

Very few candidates could explain both an observed and projected impact for their product. This may be evident in the new criterion F. This becomes evident in the new criterion F which asks for both an evaluation of the product and recommendations for future development of the product.

Criterion L - The product

Products that do not have the required complexity lose marks. In May 2012 the lack of complexity could result in lower marks on several criteria (new criteria B, D, and E). The document "Guidance on the appropriateness and complexity of the IT solution for the project" available on the OCC should be used to ensure the students select appropriate techniques.

In all projects either the content material originates from the client, or the student must collect the information (i.e. take photographs, make a movie, create a sound track). Wherever copyrighted material is used, it must be cited in the resources of the report and be clearly indicated in the product in a matter appropriate for the kind of product. (see *IB Academic Honesty*).

Criterion M - The log book

The quality of the logbooks in this session showed improvement when compared to previous ones. The new Criterion C actually is a planning page and also in some respects replaces the logbook. The first three columns are created during the planning stage and the remaining columns are filled-in as the tasks are completed. Revisions to the plan may be necessary during the process. As students are working on their product, they can be placing screenshots on the new Criterion E page. This eliminates the duplication that was occurring between the logbook and the report.

Recommendations for the teaching of future candidates

- Provide students with copies of all of the relevant ITGS documents and exemplars: ITGS Guide, checklists and exemplars from the Teacher Support Material, Guide on the appropriateness and complexity of an IT solution for the project, the project zip file for submitting the Project and a copy of this Subject Report.
- Use IT terminology in the project documentation. This includes the IT terminology that is used in applications, tools and online services.
- Allow time for the project. Students may run into unexpected difficulties that take time to resolve. They must build in time to work closely with their client throughout Criterion A through Criterion F.
- The six examples in the TSM are excellent models to follow for the documentation. The TSM can be downloaded as a zip file so that the students can become familiar with the exemplars.
- The students and the teacher should use the checklists provided in the TSM to help manage the project process.
- The process for guiding the students with the new criteria will be much the same as in the past. The assessment criteria determine the process to be used to develop the Project. Teachers should manage the development of student projects by a process of:
    - teach the expectations of a criterion

  - demonstrate examples of the criteria from the Teacher resource material
  - moderate student progress on the criteria
  - student submits the written criteria as draft 1
  - the teacher provides feedback on draft 1
  - student refines draft 1 and uploads it as draft 2 to the school server for backup
  - the process continues on the next criterion
  - when the product is completed, essentially the documentation is completed as well. It only requires the student to proofread.
  - the student should test their CD-ROM/DVD on different computers to make certain that it functions properly.
- Teacher comments for each of the criteria are useful in moderation. The teacher should provide a printed copy of their marks and comments that explain the rationale behind the awarding of them with the Project sample.

Additionally to the resources already suggested above, it is recommended that the following sources of information regarding the requirements for the new ITGS Project from May 2012 onwards be consulted:

- ITGS Guide for May 2012 onwards (pages 54-70)
- Teacher Support Material (TSM) from the OCC contains information about the new requirements, checklists for the teacher and students and 6 exemplars with both marked and unmarked versions of ITGS projects.
- Templates provided in the First exams 2012: Teacher support material (ZIP) can be downloaded from the OCC. Students are required to use these templates for submitting the project.
- ITGS FAQs and the ITGS Discussion Forum regarding the ITGS Project, especially the ITGS Project Special Event on the OCC (ITGS teachers need to regularly consult for new entries and contribute questions/comments).
- ITGS Workshop (either face-to-face or online workshop). Workshops provide teachers with the opportunity to become familiar with the requirements of the ITGS Project and all other aspects of ITGS.
- Whenever teachers have any questions about the ITGS Project, they need to post them in the ITGS Discussion Forum on the OCC.

Higher and standard level paper one

Component grade boundaries

Higher and standard level

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 4	5 - 9	10 - 14	15 - 18	19 - 22	23 - 26	27 - 40

The areas of the programme and examination that appeared difficult for the candidates

The major problem was with definitions and concepts of IT systems. Most candidates were unable to differentiate modelling from simulation, for example.

Another problem was the lack of attention to what was being asked in each question. In the question which asked for the difference between PDF and RTF, for example, a great number of candidates mentioned one or more features of one of the formats, but did not establish the differences with the other format.

The areas of the programme and examination in which candidates appeared well prepared

Most candidates were properly prepared to answer the spreadsheet related questions in the exam, such as identifying the steps that a student would take to include information from a spreadsheet in the form of a chart in a presentation. It seems the repeated years of asking spreadsheet questions in the exams are finally paying off.

The strengths and weaknesses of the candidates in the treatment of individual questions

Question 1

a) Correctly answered in general by most candidates.

b) Most candidates were able to describe one difference between PDF and RTF, but not many were able to describe a second difference. Also, it was common to find candidates who described features of one format and did not establish the difference with the other format.

c) Was correctly answered in general by most candidates.

Question 2

a) Most candidates correctly identified the formula and correctly answered the question.

b) Most candidates correctly answered the steps needed to create a chart.

c) Many candidates answered this question from the point of view of globalization in education. Only a few of them provided an answer that was specific to the scenario of the question.

Question 3

a) In this question most candidates got confused and listed the hardware needed for the inputs of the ash cloud computer model, instead of the inputs needed.

b) i) This question presented the most problems. Students had an idea of what a model and/or simulation is, but could not explain the difference between them.

ii) Most candidates were able to identify advantages of grid computing, but were unable to apply knowledge addressed in other areas of the course to identify disadvantages.

c) Here most candidates were unable to explain how developers of the ash cloud computer model can ensure that the results from using it are as accurate as possible.

Question 4

a) Most students correctly identified at least one of the items of data that must be stored by the search engine.

b) Not many students were able to describe how a search engine could take input from the user and then produce a suggested search list. Only a few candidates were able to obtain the maximum marks.

c) Most of the students were able to explain two ways in which the number of results could be narrowed.

Recommendations and guidance for the teaching of future candidates

The teaching of ITGS has to be balanced in the different areas of the syllabus in order to properly cover the ITGS “Triangle” - there cannot be an emphasis in just one area.

Teaching command terms is essential for success - far too many candidates respond to the questions with very superficial answers. If students are given a chance to practice with mock tests and are given the proper feedback about their response to the command terms, their possibility of success will greatly increase.

Further comments

Students who make use of additional sheets to answer questions must note this on the bottom of the part of the answer that is given in the space provided. With e-marking if the student does not make it clear that there is a remaining part of his/her answer on an additional sheet, that may not be so obvious and there is a risk that the examiner won't see it.

This paper will be not be in the new course, but elements of it will be merged with the current SL Paper 2 and HL Paper 2 to form the new SL Paper 1 and HL Paper 1. Recommendations for future sessions are included with the recommendations at the end of the section on HL and SL Paper 2.

Higher level and standard level paper two

General comments about both papers

Candidates showed some understanding of IT terminology and basic IT concepts. The knowledge often did not extend beyond what can be regarded as common knowledge. Candidates also had difficulty in correctly relating the terminology, concepts and examples that they studied in class to the situations presented in questions.

An understanding of how the underlying IT systems and applications function continues to be problematic. Hands-on activities need to support the understanding of how they are used in various situations. For example, students should have hands-on experience in designing and creating a relational database, inputting data and querying databases in order to understand the underlying concepts.

Questions with 4 marks or more must be organized into a coherent well-structured response that includes the use of appropriate ITGS terminology (IT terminology and terminology relating to social and/or ethical considerations).

Candidates must read questions carefully and answer the question asked. For example, if a question asks “discuss the advantages and disadvantages…” or “to what extent will these two policies…”, then both need to be addressed in the response. Extended response questions require evidence of detail, balance and use of well-supported opinions, conclusions or judgments.

Comments about common questions are in the HL comments to avoid duplication of text.

Overall recommendations for the teaching of ITGS and for assessment are located at the end of HL Paper 3 as the comments apply to all of the externally assessed components (ie Paper 1, Paper 2 and Paper 3).

Higher level paper 2

Component grade boundaries

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 6	7 - 13	14 - 20	21 - 27	28 - 33	34 - 40	41 - 60

The areas of the programme and examination that appeared difficult for the candidates

Many candidates lacked a sound knowledge of ITGS terminology. This was apparent when describing both social and ethical impacts and technical concepts. For example, the term integrity was frequently confused with accuracy or reliability. Responses to technical questions (eg 3a concerning the relationship between tables in the database) were often weak.

Another concern was the tendency of candidates to simply rephrase the stem of the question or summarise the accompanying diagram, without drawing on their ITGS knowledge.

Candidates often failed to achieve the higher marks in extended responses due to lack of description, unsupported arguments and lack of opinions or conclusions.

The areas of the programme and examination in which candidates appeared well prepared

Candidates chose their three questions wisely and generally understood the scenarios and the requirements of the questions. They were more confident identifying step-by-step processes.

The strengths and weaknesses of the candidates in the treatment of individual questions

Question 1

Candidates understood the concept of the Wireless Waitress. They were familiar with the characteristics of a PDA, offering answers such as touch screen or stylus activation. Weaker candidates mentioned characteristics such as 'small' or 'portable' which were not sufficient. The step-by-step process was understood, but some steps were vague. Candidates were expected to read the stem and also interpret the information in the diagram which clearly shows selection of food items from options on the PDA screen. Most candidates were able to gain marks in 1c), but weaker candidates did not address the processing aspect of handwriting recognition.

The first line of the stem indicated that waiters take customers' orders at the table, so it was disappointing that some candidates wrote about the implications when customers are expected to order their own meals using a PDA. Impacts on the environment, such as saving paper, were not relevant.

Question 2 (Common question)

This question was generally well understood. Good candidates could define spam as unsolicited emails sent in bulk to lists of recipients. Some answers were vague and many candidates scored half marks. Part b) was quite straightforward, although some candidates did not provide sufficient detail about the method of distribution, giving a description of the use of RSS feeds without indicating where the newsletter was located. Answers to 2c) showed a good understanding of smart phones. Lack of detailed explanation of the reasons for the amount of storage meant full marks were often not scored. Apart from some candidates confusing the alerts with distribution of newsletters, the majority of candidates were able to discuss several advantages and disadvantages of introducing *Simplified Alerts* for schools and parents.

Question 3 (Common question)

Questions on the topic of databases have always proved difficult and Question 3 was no exception. Few candidates could describe a 'one-to-many' relationship. Some candidates observed that the field Drug_Name linked the tables and they scored a mark for this answer. Answers to part b) were varied and sometimes disappointing. Many candidates wrote incorrectly about access levels and passwords instead of focusing on how to prevent input errors though design features such as field types, validation rules, and drop down lists. Most candidates scored at least half marks for part c). Failure to compare the effectiveness of the two formats or lack of any reference to the use by the doctor prevented them attaining the higher end of the markband. These omissions may have been due to skim reading of the question. Most candidates were able to offer suggestions of ways the prescription database could help a doctor. Some referred back to the stem and compared the electronic database

with the previously used textbook, whilst others compared the electronic database with the doctor relying on memory. Both approaches were accepted.

Question 4

Candidates could define the term sensor. They were able to identify steps in calculating the household waste, but in some cases the steps were imprecise (e.g. the bin is weighed rather than the weight of the rubbish is calculated or the truck reads the tag, rather than the reader reads the serial number on the tag). Candidates needed to show their understanding of the technology. Data mining was not always well understood, but some candidates did suggest replacing serial numbers with numbers that only identify the neighbourhood. Answers to 4c) generally lacked depth. In part d) candidates needed to focus on monitoring data about garbage and some went off course and talked about advantages of such a scheme to the environment.

Standard level paper 2

Component boundaries

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 6	7 - 13	14 - 20	21 - 26	27 - 33	34 - 39	40 - 60

The areas of the programme and examination in which candidates appeared well prepared

Candidates were more confident in writing extended responses to familiar topics where they have personal experience combined with the concepts that they learn in class (HL Q2 SL Q2 parts (c) and (d) about Simplified Alerts, an internet-based SMS alert notification system). Where opinions, conclusions and judgments are provided, they still tend to be summaries rather than outcomes based on the evidence presented.

There was evidence in some schools that candidates had experience in organizing their responses according to the requirements in the question. This was in contrast to schools where it was obvious that the students had little or no experience in structuring their responses.

Wherever possible students must be given the opportunity to relate the concepts in IT books to real situations and be provided with the opportunity to analyze those situations. Some candidates were able to address new situations (combining what they had learned in class about the proper methods use for the disposal of hardware and ensuring that sensitive data is removed (SL Q6 about government data stored on a hard drive that was sold on eBay). Other students demonstrated no more than a layman's knowledge of formatting a hard disk which was insufficient.

Candidates who were well-prepared demonstrated a secure use of IT terminology and concepts in their responses. They could structure responses to questions requiring definitions (SL Q1(a) define pattern recognition, SL Q2(a) define spam). They were able to provide evidence to support their arguments with examples. Weaker candidates tend to use words such as "thing", "stuff" and other generic non-IT words where specific terminology needs to be used.

The strengths and weaknesses of the candidates in the treatment of individual questions

Question 1

The question focused on the use of biometrics for recognition and authentication. Candidates experienced some difficulty in differentiating between the two terms and also in defining pattern recognition (part a). They were able to describe two other methods of biometric recognition (part b) and provide reasons why biometrics are increasingly used for the authentication of employees (part c). However, weaker students went off-course in discussing the advantages and disadvantages of video gait pattern recognition to verify a person's identity and talked about how it could be used in companies to authenticate employees.

Questions 2 and 3

Common questions to HL - see HL Paper 2.

Question 4

This question combines the ideas of online game playing linked to a database and online maps linked to a database in the situation of playing an online Monopoly game linked to Google maps. The question was the second most popular question. Question 2 was the most popular in the options in Section B. Students understood data types in part a and better students could identify steps that could be involved in updating the relevant database. Students also were able to provide feasible reasons why there would be an increased interest in playing internet-based versions of popular board games. However, students found part d challenging because of three concepts: agreements, integrity and accuracy.

Question 5

Robots that move in groups was not as popular as Q2, Q3 and Q4 and in general was not answered as well. Candidates were not as familiar with the IT involved in robotics and had difficulty in providing some of the steps in a step-by-step process. From other studies of robots, candidates experienced difficult in explaining two real-life situations in part c that would make the model ineffective. Candidates also could not discuss well the issues involved in placing the total responsibility for driving in the hands of robots. In general transferring the knowledge about the use of robotics in various situations that would have been studied in class to a new situation was not as successful as it should have been.

Question 6

Even though the situation of disposing of hardware containing sensitive data is a familiar one, the question was not answered as frequently as would have been expected. Candidates were able to identify two devices that could be used as portable storage media. Only better candidates could provide two effective ways to ensure that data cannot be retrieved when computer components are disposed of. In part c, candidates seem to ignore the word compare and only described two different methods for disposing of computer hardware. In part d, candidates did not always address both policies that were presented to prevent unauthorized access to sensitive data. They did not seem to realize that they needed to analyze the effectiveness of each of the policies as they relate to unauthorized access. Other students did not understand what a policy is.

Information for the new Paper 1, first examinations May 2012

The new SL Paper 1 and HL Paper 1 will follow a similar format to the current SL Paper 2 and HL Paper 2. However, there will be some significant changes:

- The new papers will give less time per question, a decrease from 40 minutes to 30 minutes, which will require the following adjustments:
    - The management of time will be more important particularly on HL Paper 1.
    - The extended responses will need to be more concise, approximately 400 words, to ensure that the candidates complete the paper in the time allotted. **One suggestion is to ask students to write an extended response in 10 minutes, this will give a clear indication of the length of the response.**
    - There are additional command terms. Teachers must ensure their students are familiar with them.

Special Events will be held in March 2012 to help prepare teachers for these changes.

Higher level paper three

Component grade boundaries

Grade:	1	2	3	4	5	6	7
Mark range:	0 - 4	5 - 8	9 - 12	13 - 15	16 - 19	20 - 22	23 - 30

The areas of the programme and examination that appeared difficult for the candidates

As usual the IT system knowledge of candidates was weak and in some cases did not go beyond common sense points. This was evident with Q2(a) where few candidates were able to give a technically sound and detailed answer to what SSL is.

There was a lack of structure in the responses leading to repetition and failure to achieve the highest marks.

Candidates did not always understand the way to respond to the command verbs. In order to gain the second mark in a “describe” question, additional information must be provided. “Evaluate” questions were poorly done as most candidates only described issues in a basic narrative way without offering a more penetrating insight.

The levels of knowledge, understanding and skill demonstrated

The majority of students understood the contents of the case study but the level of knowledge was average. There was a better evidence of research.

The knowledge of technical concepts required does not go beyond basic research of the key terms of the case study.

The strengths and weaknesses of the candidates in the treatment of individual questions

Question 1

Most students seemed to find this fairly straightforward and many scored 4 out of 4. Students were able to relate easily to the question from their own web surfing experiences. Some lost a mark by describing the function of the multimedia and not what the multimedia object itself was. A few candidates were confused about JavaScript, PHP etc. and mentioned them, when really they are components of the web-page in which the multimedia object is embedded.

Question 2

a) This was the worst answered question. Very few responses made the top band on this question as they were usually vague about SSL. Some students mentioned encryption but provided little explanation as to what it was and how it works; they assumed that talking around it was sufficient. Only the best candidates gave a good explanation of encryption, with examples of different algorithms.

b) A fair attempt was made by many students, and most seemed to understand the issues involved. This question was answered badly by some candidates because there was confusion between open source and free internet services. Many students

quoted the limitations of open source as being the limitations of free accounts on services as Wordpress.com compared with paid services which offer greater functionality and customization. Candidates who scored well were aware of the consequences of source code availability and the open source community model of support, updates, etc.

Question 3

There was more reference to independent research. A lot of repetition from the case study was evident in responses from weaker students with no balanced discussion. Most candidates included some analysis and referred to Foto Creativa. There were only a few candidates who scored well on this question by adding analysis, evidence of original research and substantiated opinions. However only a few candidates seemed to fully understand the markband and what was necessary to reach the top level. The majority of students failed to understand the expectations of command terms such as analyze, examine and evaluate only ending up giving unsubstantiated descriptions that lacked detail.

Recommendations and guidance for the teaching of future candidates

Many students need to be taught how to read the question and how to structure an extended response. They need to be taught how to analyze. Teachers should instruct/advise candidates to link their responses with the stimulus material and avoid generalized evaluations in Q3 and give students opportunity to learn how to integrate research into Q3 style questions.

Teachers should ensure that the context of the Case Study and role of the technology within it is understood before undertaking independent research.

Students need to understand the demands of each command term in the ITGS guide to be able to answer questions correctly.

Independent research such as field trips, guest speakers and online collaboration should continue to be encouraged as it does gives candidates a deeper insight into the Case Study. It also establishes a relationship with a real life scenario.

Overall recommendations for the teaching of ITGS and for assessment

The following teaching strategies are approaches that should be used to help candidates develop the necessary knowledge and skills for all of the assessment components.

Pedagogy

- Use the Triangle as a foundation for planning and teaching the course.
- Teach students how to interpret a scenario and apply their knowledge from similar situations to it.
- Once a topic has been taught, give students the opportunity to apply this knowledge to new situations.
- Insist on the correct use of ITGS terminology at all times (in class discussions, during hands-on session with IT tools, written assignments and in exams). Encourage the compilation of a glossary to define and describe the terms in the ITGS Guide, terms related to the use of IT tools and terminology encountered in news articles. Insist that words such as “thing”, “stuff” and other generic terminology be replaced by appropriate ITGS terminology (IT terminology or the terminology relating to social and ethical considerations).
- Ensure students engage in practical exercises to provide first-hand experience of IT tools.
- Encourage class discussions and wide research so students can support their arguments with real life examples.
- Use a range of real experiences (eg. visits, hands-on activities, analyzing news articles) and visual material (eg. videos, diagrams, photographs) to support the students’ understanding.
- Use an effective method for recording information and examples that are collected, discussed and analyzed throughout the course so that students have the material consolidated to review before the examinations
- Use past IB exam papers for class tests and mock exams. Encourage students to plan their extended responses by listing the stakeholders and issues.
- Encourage students to engage in wide research as this enables them to apply their knowledge to a variety of situations and back up their arguments with meaningful examples. Ensure that students can illustrate evidence of independent research in the extended responses on HL paper 3
- Help students to apply critical thinking skills so they can move beyond a basic description toward in-depth analysis. Show them how to write a well supported conclusion
- Visit the OCC where you can share resources and join the very active ITGS forum
- Check the IBO events calendar on the OCC for details of workshops in your region
- Share the markbands from the Guide with your students and explain how they work.
- Share this Subject Report with your students.

Assessment

- Use command terms in assignments and tests
- Teach the students how to structure responses particularly for extended response questions
- Use specimen paper questions and adapt questions from past papers to provide students with experience in responding to ITGS questions for class tests and mock exams. Provide feedback to students on their written responses and **use** the markband for extended responses
- Insist that students discuss concepts and issues beyond those provided in the stem of the paper. (This will be particularly important in Paper 2 from May 2012 onwards)
- Advise students to read and re-read a question then underline key words to prevent going off course
- Explain and continuously use command terms, markschemes and markbands. This is essential knowledge in order to understand the requirements of exam questions
- Familiarise students with the time constraints of working in an exam, particularly the new Paper 1. Give them practice sessions that replicate these time constraints for example 30 minutes to complete one Paper 1 type question so they earn to write responses of an appropriate length.

Teachers can receive additional support by being able to:

- Attend ITGS workshops. Search for both titles; “ITGS” and “Information Technology in a Global Society” in the workshop databases at http://www.ibo.org/events/index.cfm (face-to-face workshops) and http://onlineworkshops.ibo.org/workshop_search (online workshops).
- Follow the ITGS discussions and Special Events on the Online Curriculum Center (OCC) on a weekly basis.
- Ask questions about this subject report or any aspect of ITGS in the discussion forum. Several special events are planned for early in the year (look for announcements on the OCC).